

DEPARTMENT OF ENVIRONMENTAL QUALITY

OFFICE OF OIL, GAS, AND MINERALS

OIL AND GAS OPERATIONS

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(By authority conferred on the supervisor of wells and the director of the department of environmental quality by section 61506 of Act No. 451 of the Public Acts of 1994, as amended, sections 9 and 251 of Act No. 380 of the Public Acts of 1965, as amended, and Executive Reorganization Order No. 1991-22, being §§324.61506, 16.109, 16.351, and 299.13 of the Michigan Compiled Laws)

R 324.102, R 324.103, R 324.201, R 324.202, R 324.203, R 324.206, R 324.210, R 324.301, R 324.302, R 324.303, R 324.304, R 324.407, R 324.411, R 324.413, R 324.503, R 324.511, R 324.613, R 324.705, R 324.1015, R 324.1103, R 324.1202, and R 324.1206 of the Michigan Administrative Code are amended and Part 14, R 324.1401, R 1402, R 324.1403, R 324.1404, R 324.1405, and R 324.1406 are added as follows:

R 324.102 Definitions; A to M.

Rule 102. As used in these rules:

- (a) “Act” means 1994 PA 451, MCL 324.101 et seq.
- (b) “ANSI” means the American national standards institute.
- (c) “API” means the American petroleum institute.
- (d) “Authorized representative of the supervisor” means a department of environmental quality employee who is charged with the responsibility for implementation of the act or these rules.
- (e) “Blowout prevention equipment” means a casinghead control device designed to control the flow of fluids from the well bore by closing around the drill pipe or production tubing or completely sealing the hole in the absence of drill pipe or production tubing.
- (f) **“Bottom hole” means the terminus of a wellbore.**
- ~~(f)~~ (g) “Brine” means all nonpotable water resulting, obtained, or produced from the exploration, drilling, or production of oil or gas, or both.
- ~~(g)~~ (h) “Central production facility” means production equipment which has been consolidated at a central location that provides for the commingling of oil or gas production, or both, from 2 or more wells or production units of diverse ownership or from 2 or more prorated wells or production units.
- ~~(h)~~ (i) “Conformance bond” means a surety bond that has been executed by a surety company authorized to do business in the state of Michigan, cash, certificates of deposit, letters of credit, or other securities that are filed by a person and accepted by the supervisor to ensure compliance with the act, these rules, permit conditions, instructions, orders of the supervisor, or an order of the department of environmental quality.

~~(i)~~ “Development well” means a well which has as its objective an oil or gas pool known to be, or have been, productive through the discovery well of the oil or gas pool and which is located either within a 2-mile radius of the discovery well or on the same structure as the discovery well.

(j) “Directionally drilled well,” means a well purposely deviated from the vertical using controlled angles to reach an objective location.

~~-(k)~~ “Discovery well” means a well that discovers a new and previously untapped oil or gas pool. A discovery well may open up a new field or it may locate a previously unknown oil or gas pool in an old field.

~~(l)~~ (k) “Drilling completion” means the time when a well has reached its permitted depth or the supervisor has determined drilling has ceased.

~~(m)~~ (l) “Drilling operations” means all of the physical and mechanical aspects of constructing a well for the exploration or production of oil or gas, or both, for injection of fluids associated with the production of oil or gas, or both, or the storage of natural hydrocarbons or liquefied petroleum gas derived from oil or gas, and includes all of the following:

- (i) Moving drilling equipment onto the drill site.
- (ii) Penetration of the ground by the drill bit and drilling of the well bore.
- (iii) Casing and sealing of the well bore.
- (iv) Construction of well sites and access roads.

~~(n)~~ (m) “Drilling unit” means the area prescribed by an applicable well spacing rule or order for the granting of a permit for the drilling and operation of an oil or gas well, or both.

~~(o)~~ (n) “Facility piping” means piping that connects any of the following:

- (i) Compressors.
- (ii) Flares.
- (iii) Loadouts.
- (iv) Separators.
- (v) Storage tanks.
- (vi) Transfer pumps.
- (vii) Treatment equipment.
- (viii) Vents.

~~(p)~~ (o) “Fence” means a structure which is designed to deter access and which consists of not less than 2 strands of barbed wire, 1 strand being approximately 18 inches above the ground and the other strand being approximately 42 inches above the ground, secured to supporting posts or means an equivalent structure that deters access.

~~(q)~~ (p) “Final completion” means the time when locating, drilling, deepening, converting, operating, producing, reworking, plugging, and proper site restoration have been performed on a well in a manner approved by the supervisor, including the filing of the mandatory records, and when the conformance bond has been released.

~~(r)~~ (q) “Flow line” means piping that connects a well or wells to a surface facility.

~~(s)~~ (r) “Fresh water” means water which is free of contamination in concentrations that may cause disease or harmful physiological effects and which is safe for human consumption.

~~(t)~~ (s) “Gas storage” means the use of a depleted oil or gas pool, salt cavern, or other porous strata utilized for the purpose of injecting and withdrawing gas from the depleted oil or gas pool, salt cavern, or other porous strata.

~~(u)~~ (t) “Gathering line” means a pipeline that transports natural gas from a surface facility to a transmission pipeline.

~~(v)~~ (u) “Geologist” means a person who is certified as a geologist by a credible geological

professional association or who, by reason of his or her knowledge of the natural sciences, mathematics, and the principles of geology acquired by professional education and practical experience, is qualified to engage in the practice of the science of geology.

~~(w)~~ (v) "Groundwater" means water below the land surface in the zone of saturation.

~~(x)~~ (w) "Injection well" means a well used to dispose of, into underground strata, waste fluids produced incidental to oil and gas operations or a well used to inject water, gas, air, brine, or other fluids for the purpose of increasing the ultimate recovery of hydrocarbons from a reservoir or for the storage of hydrocarbons.

~~(y)~~ (x) "Instruction" means a written statement of general applicability which is issued by the supervisor, which conforms with the act and rules promulgated under the act, and which clarifies or explains the applicability of the act or rules to commonly recurring facts or circumstances.

~~(z)~~ (y) "Multiple zone completion" means a well constructed and operated to separately produce oil or gas, or both, from more than 1 reservoir through 1 well bore.

R 324.103 Definitions; N to Z.

Rule 103. As used in these rules:

(a) "Nuisance odor" means an emission of any gas, vapor, fume, or mist, or combination thereof, from a well or its associated surface facilities, in whatever quantities, that causes, either alone or in reaction with other air contaminants, injurious effects to human health or safety; unreasonable injurious effects to animal life, plant life of significant value, or property; or unreasonable interference with the comfortable enjoyment of life or property.

(b) "Oil and gas operations" means permitting activities required under R 324.201, drilling operations, well completion operations, operation of oil and gas wells, plugging operations, and site restoration.

(c) "Operation of oil and gas wells" means the process of producing oil or gas, or both, or the storage of natural hydrocarbons or liquefied petroleum gas, including all of the following:

- (i) Production, pumping, and flowing.
- (ii) Processing.
- (iii) Gathering.
- (iv) Compressing.
- (v) Treating.
- (vi) Transporting.
- (vii) Conditioning.
- (viii) Brine removal and disposal.
- (ix) Separating.
- (x) Storing.
- (xi) Injecting.
- (xii) Testing.
- (xiii) Reporting.
- (xiv) Maintenance and use of surface facilities.
- (xv) Secondary recovery.

(d) "Organization report" means a listing of all corporate officers, directors, incorporators, partners, or shareholders who have the authority to make, or are responsible for making, operational decisions, including the siting, drilling, operating, producing, reworking, and plugging of wells.

(e) "Permit" means a permit to drill and operate an oil or gas well, or both, or an injection well,

including associated surface facilities and flow lines.

(f) “Plugging operations” means the sealing of the fluids in the strata penetrated by an oil or gas well, or both, upon abandonment of the well or a portion of the well bore, so that the fluid from one stratum will not escape into another or to the surface.

(g) “Ppm” means parts per million by volume.

(h) “Producing interval” means any section of a wellbore that is open to, or intended to be open to, a formation or part of a formation that is intended to produce or is capable of producing oil or gas or both. The section of the wellbore may be open to the formation or part of the formation by any means, and may include but is not limited to a section of a wellbore that is either uncased or has perforated casing.

~~(h)~~ (i) “Psi” means pounds per square inch.

~~(h)~~ (j) “Psig” means pounds per square inch gauge.

~~(h)~~ (k) “Secondary recovery” means the introduction or utilization of fluid or energy into or within a pool for the purpose of increasing the ultimate recovery of hydrocarbons from the pool.

~~(h)~~ (l) “Shut-in” means an action by a permittee to close down a producing well, a well capable of producing, or an injection well temporarily for any of the following reasons:

(i) Repair.

(ii) Cleaning out.

(iii) Building up reservoir pressure.

(iv) Planning for secondary recovery.

(v) Other injection projects.

(vi) While awaiting connection of a sales line.

(vii) Lack of a market.

~~(h)~~ (m) “Site restoration” means all of the following:

(i) The filling and leveling of all cellars, pits, and excavations.

(ii) The removal or elimination of all debris.

(iii) The elimination of all conditions that may create a fire or pollution hazard.

(iv) The minimization of erosion.

(v) The restoration of the well site as nearly as practicable to the original land contour or to a condition approved by the supervisor.

~~(m)~~ (n) “Structure used for public or private occupancy,” means a residential dwelling or place of business, place of worship, school, hospital, government building, or other building where people are usually present at least 4 hours per day.

~~(n)~~ (o) “Supervisor” means the director of the department of environmental quality or his or her assistants as approved by the director of the department of environmental quality.

~~(o)~~ (p) “Surface casing” means the casing string or strings used primarily for protecting fresh water or mineralized water resources from potential contamination during the drilling and operation of an oil or gas well, or both.

~~(p)~~ (q) “Surface facility,” means a facility used in the injection of fluids or in the production, processing, or treatment of oil or gas, or both, including any of the following:

(i) Pumping equipment.

(ii) Fluid disposal equipment.

(iii) Facility piping.

(iv) Load outs.

(v) Separators.

(vi) Storage tanks.

(vii) Treatment equipment.

(viii) Compressors.

~~(q)~~ **(r)** "Surface water" means a body of water, and the associated sediments, which has a top surface that is exposed to the atmosphere and which is not solely for wastewater conveyance, treatment, or control. Surface water may be any of the following:

(i) A Great Lake or its connecting waters.

(ii) An inland lake or pond.

(iii) A river or stream, including intermittent streams.

(iv) An impoundment.

(v) An open drain.

(vi) A wetland.

~~(s)~~ **(s)** "Well completion" means the time when a well has been tested and found to be incapable of producing hydrocarbons in commercial quantities and has been plugged or has been found capable of producing commercial quantities of hydrocarbons or when the well has been equipped to perform the service for which it was intended.

~~(t)~~ **(t)** "Well completion operations" means work performed in an oil or gas well, or both, after the well has been drilled to its permitted depth and the production string of casing has been set, including perforating, artificial stimulation, and production testing.

~~(u)~~ **(u)** "Well location" means the surface location of a well.

~~(v)~~ **(v)** "Zoned residential" means a geographic area that was zoned by a local unit of government before January 8, 1993, as an area designated principally for permanent or recreational residences.

R 324.201 Application for permit to drill and operate requirements; issuance of permit.

Rule 201. (1) Until a person has complied with the requirements of subrule (2) of this rule, a person shall not begin the drilling or operation of a well for any of the following:

(a) Oil or gas, or both.

(b) Injection for secondary recovery.

(c) Injection for the disposal of brine, oil or gas field waste, or other fluids incidental to the drilling, producing, or treating of wells for oil or gas, or both, or the storage of natural hydrocarbons or liquefied petroleum gas derived from oil or gas.

(d) Injection or withdrawal for the storage of natural dry gas or oil well gas.

(e) Injection or withdrawal for the storage of liquid hydrocarbons or liquefied petroleum gas.

(2) A permit applicant shall comply with all of the following permit application requirements:

(a) The exact well location shall be surveyed by a surveyor licensed in the state of Michigan, a readily visible stake or marker shall be set at the well location, and a flagged route shall be established to the well location.

(b) The survey required by subdivision (a) of this subrule shall include a plat that shows all of the following:

(i) The correct well location and bottom hole location description.

(ii) A flagged route or explanation of how the well location may be reached.

(iii) Footages from the nearest section, quarter section, and drilling unit lines.

(iv) Information relative to the approximate distances and directions from the stake or marker to special hazards or conditions, including all of the following:

(A) Surface waters and other environmentally sensitive areas within 1,320 feet of the proposed well. Environmentally sensitive areas are identified by the department pursuant to applicable

state and federal laws and regulations.

(B) Floodplains associated with surface waters within 1,320 feet of the proposed well.

(C) Wetlands, as identified by the provisions of sections 30301 to 30323 of the act, within 1,320 feet of the proposed well.

(D) Natural rivers, as identified by the provisions of sections 30501 to 30515 of the act, within 1,320 feet of the proposed well.

(E) Critical dune areas, as designated by the provisions of sections 35301 to 35326 of the act, within 1,320 feet of the proposed well.

(F) Threatened or endangered species, as identified by the provisions of sections 36501 to 36507 of the act, within 1,320 feet of the proposed well.

(G) All buildings, recorded fresh water wells and reasonably identifiable fresh water wells utilized for human consumption, public roads, pipelines, and power lines that lie within 600 feet of the proposed well location.

(H) All public water supply wells identified as type I and IIa that lie within 2,000 feet of the proposed well location and type IIb and III that lie within 800 feet of the proposed well location, as defined in Act No. 399 of the Public Acts of 1976, as amended, being §325.1001 et seq. of the Michigan Compiled Laws.

(I) Identification of the existing local zoning designation of the surface location of the well.

(c) One signed and sealed copy of the survey, on a form prescribed by the supervisor, shall be filed with an application for a permit to drill and operate.

(d) A person applying to drill and operate a well shall completely and accurately fill out, sign, and file a written application for a permit to drill on a form prescribed by the supervisor. The application shall be submitted to the supervisor at the offices of the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, and a copy of the first page of the permit application shall be mailed to the clerk of the county and the surface owner of record of the land on which the well **location** is to be located within 7 days of submitting the permit application by first-class United States mail addressed to the surface owner's last known address as evidenced by the current property tax roll records.

(e) When the proposed well **location** is ~~located~~ in or adjacent to any areas described in subdivision (b)(iv)(A) or (B) of this subrule, a person shall file for and obtain all applicable permits from the department of environmental quality before developing the well site or access to the well site or before drilling of the well. The person shall also file for and obtain any additional permits that may be required before the installation of flow lines or production equipment or before operating the well.

(f) A person shall file an environmental impact assessment as instructed by the supervisor.

(g) A person shall file an organization report if a current organization report is not on file with the supervisor.

(h) A person shall file a conformance bond or statement of financial responsibility pursuant to R 324.210.

(i) A person shall pay the fee as specified by statute. A fee filed with an application shall not be applied to a subsequent application. The fee shall be returned if a permit is not issued.

(j) All of the following additional information is required to be submitted with an application for a permit to drill and operate an injection well or to convert a previously drilled well to an injection well:

(i) A plat which shows the location and total depth of the proposed injection well, shows each

abandoned, producing, or drilling well and dry hole within 1,320 feet of the proposed injection well location, and which identifies the surface owner of the land on which the proposed injection well **location** is to be located and each operator of a producing leasehold within 1,320 feet of the proposed injection well **location**.

(ii) If a well is proposed to be converted to an injection well, a copy of the completion report, together with the written geologic description log or record filed pursuant to R 324.418(a) and borehole and stratum evaluation logs filed pursuant to R 324.419(1). The permittee shall also file an application for change of well status pursuant to R 324.511.

(iii) Plugging records of all abandoned wells and casing, sealing, and completion records of all other wells within 1,320 feet of the proposed injection well location. An applicant shall also submit a plan reflecting the steps or modifications believed necessary to prevent proposed injected fluids from migrating up, into, or through inadequately plugged, sealed, or completed wells.

(iv) A schematic diagram of the proposed injection well that shows all of the following information:

(A) The total depth or plug-back depth of the proposed injection well.

(B) The true vertical depth and thickness of the disposal or injection interval.

(C) The geological name of the disposal interval.

(D) The geological name and the top and bottom depths of all fresh water strata to be penetrated.

(E) The depths of the top and bottom of the casing or casings and cement to be used in the proposed injection well.

(F) The size of the casing and tubing and the depth of the packer.

(v) Information confirming that injection of liquids into the proposed zone will not exceed the fracture pressure gradient or, information showing that injection into the proposed geological strata will not initiate fractures through the overlying strata.

(vi) Proposed operating data, excluding injection wells utilized for gas storage, including all of the following data:

(A) The daily injection rates and pressures.

(B) The types of fluids to be injected.

(C) A qualitative and quantitative analysis of a representative sample of fluids to be injected.

A chemical analysis shall be prepared for each type of fluid to be injected showing specific conductance as an indication of the dissolved solids and a determination of the concentration of the following parameters for chemical balance and indicators for comparison of water quality:

Cations	Anions
Calcium	Chloride
Sodium	Sulfate
Magnesium	Bicarbonate
Potassium	

However, if the fluid to be injected is fresh water, then an analysis is not required.

(D) The geological name of the injection strata and the vertical distance separating the top of the injection strata from the base of the lowest fresh water strata.

(E) A plan for conducting 5-year mechanical integrity tests of casing pursuant to R 324.805.

(vii) For a proposed injection well to dispose of oil or gas field waste, or both, into a zone that would likely constitute a producing oil or gas pool, a list of all offset operators and certification that the person making application for an injection well has notified all offset operators of the

person's intention by certified mail. If within 21 days after the mailing date a substantive objection is filed with the supervisor by an offset operator, then the application shall not be granted without a hearing pursuant to part 12 of these rules. A hearing may also be scheduled by the supervisor to determine the need or desirability of granting permission for the proposed injection well.

(viii) A proposed plugging and abandonment plan.

(k) A person shall receive and post the permit in a conspicuous place at the well location. The permit shall remain posted at the well location until well completion.

(3) A person who desires to directionally drill a well shall apply for and obtain a permit to drill and operate as provided in this rule. The application to drill a directionally drilled well shall include, in addition to the information specified in subrule (2) of this rule, all of the following information:

(a) The depth at which deviation from vertical is planned.

(b) The angle and path of each deviation.

(c) The proposed horizontal distance and direction from the well location to the bottom hole.

(d) The well's measured and true vertical depths.

(4) The application for a well shall be processed pursuant to this rule and the supervisor shall issue or deny a permit to drill and operate pursuant to section 61525 of the act. Upon receipt of an application for a permit, the supervisor or authorized representative of the supervisor shall have up to 60 days to review the application to determine if the application is accurate and complete. If the application is determined to be inaccurate or incomplete, then the supervisor or authorized representative of the supervisor shall provide the person making the application for a permit, within the 60-day period, with a notice that the application is inaccurate or incomplete and what changes or additional information shall be submitted. Upon receipt of the requested information, the supervisor or authorized representative of the supervisor shall have up to an additional 30 days to review the information to determine if the application is accurate and complete. Upon completion of the review process, the supervisor or authorized representative of the supervisor shall issue or deny the permit application within 10 business days, as provided in section 61525 of the act. A determination of administrative completeness shall not be construed to mean that additional information may not be required from the applicant as a result of new circumstances that come to the attention of the supervisor. Pursuant to R 324.205, the supervisor shall not issue a permit to a person or an authorized representative of a person if the person is not eligible for a permit.

R 324.202 Directional redrilling.

Rule 202. (1) A permittee of a well who desires to directionally redrill an existing well to a different bottom hole location shall file an application for a new permit. The application shall set forth, in detail, the new bottom hole location and identify the plug-back depth of the existing well and shall be filed under R 324.201(3). The directional redrilling shall not be commenced until the application has been approved by the supervisor or authorized representative of the supervisor, except as provided in subrule (2) of this rule. A new permit and an additional fee shall be required.

(2) A permittee of a well who desires to directionally redrill an existing permitted drilling well to a different bottom hole location with the drilling rig then on location shall obtain approval from the supervisor or authorized representative of the supervisor. Approval to redrill shall be obtained by contacting the authorized representative of the supervisor in person or by telephone

and providing pertinent details of the proposed directional redrilling. Approval may be granted immediately if all of the following provisions are complied with:

(a) The existing drilled hole is plugged back before starting the new directional hole under the provisions of these rules.

(b) ~~The new bottom hole location conforms to applicable spacing~~ **permittee provides an adequate description of the proposed directional redrill, including the depth, angle, and path of the deviation, and the bottom hole location.**

(c) The well has adequate bonding or a statement of financial responsibility has been filed under R 324.210.

(3) If approval to directionally redrill is granted, a permittee of a well shall obtain a new permit and pay an additional fee. The application for a new permit and additional fee shall be filed within 10 days at the offices of the Michigan Department of Environmental Quality, ~~Geological and Land Management Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909. In addition to other enforcement actions, failure to comply with this subrule shall be cause for immediate suspension of any or all components of the oil and gas operations on the well.

(4) A well log and plugging record shall be filed on the plugged-back hole under these rules.

R 324.203 Lost holes.

Rule 203. (1) A permittee of a well shall obtain approval to skid a rig or move to start a new hole when a hole has been lost. A new permit or additional fee is not required if the new **well** location ~~for the well~~ is within 165 feet of the lost hole and the drilling unit is not changed.

(2) A permittee of a well may obtain approval for skidding a rig or moving to a new **well** location ~~for the well~~ because of a lost hole from the authorized representative of the supervisor in person or by telephone. Approval may be granted immediately if all of the following provisions are complied with:

(a) The lost hole shall be plugged before starting the replacement hole under the provisions of these rules.

(b) The new **well** location ~~for the well~~ shall be made at a safe distance from the lost hole.

(c) The **permittee provides an adequate description of the** new bottom hole location ~~shall conform to applicable spacing.~~

(d) The new **well** location ~~for the well~~ shall not create surface waste.

(e) An amended application with corrected attachments and supplements shall be filed within 5 business days at the offices of the Michigan Department of Environmental Quality, ~~Geological and Land Management Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909. In addition to other enforcement actions, failure to comply with this subrule shall be cause for suspension of any or all components of the oil and gas operations on the well.

(f) A well log and well plugging record shall be filed on all lost holes under the provisions of these rules.

R 324.206 Modification of permits; deepening permits; change of ownership.

Rule 206. (1) A permit shall not be transferred to a location outside of the drilling unit.

(2) A permittee of a well who has not initiated drilling of a well shall not do either of the following:

(a) Change the well location within the drilling unit without the prior approval of the supervisor or authorized representative of the supervisor. To receive approval, a permittee shall

return the permit to the Lansing office of the supervisor together with a revised application with corrected attachments and supplements. If the permittee requests a change in the well location, then a new permit and an additional fee are required. Drilling shall not begin until the new permit or revised permit has been issued by the supervisor or authorized representative of the supervisor and posted at the drilling site.

(b) Change the method of drilling, casing and sealing programs, or other conditions of the permit without the prior approval of the supervisor or authorized representative of the supervisor. To receive approval, the permittee shall return the permit to the Lansing office of the supervisor together with a revised application with corrected attachments and supplements. If the permittee only requests a modification of the existing permit conditions, then an additional fee is not required. Drilling shall not begin until the revised permit has been approved by the supervisor or authorized representative of the supervisor and posted at the drilling site.

(3) A permittee of a well who begins the drilling of a well and encounters drilling problems or other drilling conditions that necessitate a change shall not do either of the following:

(a) Change the well location within the drilling unit, other than as provided by R 324.203, without the prior approval of the supervisor or authorized representative of the supervisor. To receive approval to change the well location, the permittee shall return the permit to the Lansing office of the supervisor together with a revised application with corrected attachments and supplements. Drilling shall not begin at the new location until the new permit has been issued by the supervisor or authorized representative of the supervisor. A new permit and an additional fee are required.

(b) Change the method of drilling, casing and sealing programs, or other conditions of the permit without the prior approval of the supervisor or authorized representative of the supervisor. To receive approval to modify an existing permit condition only, the permittee shall contact the supervisor or authorized representative of the supervisor by letter, telephone, or visit and explain the drilling circumstances and request the necessary changes to the permit. The supervisor or authorized representative of the supervisor may give verbal approval to modify the permit with conditions for additional reporting requirements by the permittee. If approval to modify an existing permit is granted, then the revised permit and corrected attachments and supplements shall be filed, within 10 days, at the offices of the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909. An additional permit fee is not required.

(4) A permittee of a well who desires to deepen a well below the permitted stratigraphic or producing horizon where well completion has occurred shall file an application for a deepening permit. The application shall set forth, in detail, the new proposed total depth and the plan for casing and sealing off the oil, gas, brine, or fresh water strata to be found, or expected to be found, in the deepening operation. The deepening operation shall not be commenced until the application has been approved by the supervisor or authorized representative of the supervisor. A deepening permit and an additional fee are required.

(5) A permittee of a well who desires to continue the drilling of a well below the permitted depth, but within the permitted stratigraphic or producing horizon where drilling completion or well completion has occurred, shall file an application for change of well status pursuant to R 324.511. The application shall set forth, in detail, the new proposed total depth and the plan for casing and sealing off the oil, gas, brine, or fresh water strata found, or expected to be found, when drilling is continued. The approval of the change of well status shall serve to revise the permit to reflect the new permitted depth. The continuation of drilling shall not be commenced

until the application for change of well status has been approved by the supervisor or authorized representative of the supervisor. To obtain approval to continue the drilling below the permitted depth, but within the permitted stratigraphic or producing horizon with the drilling rig then on location, the permittee shall contact the supervisor or authorized representative of the supervisor by letter, telephone, or visit and explain the circumstances for the request to continue the drilling. The supervisor or authorized representative may give verbal approval to continue the drilling below the permitted depth, but within the permitted stratigraphic or producing horizon. If approval to continue the drilling is granted, then the permittee shall file the application for change of well status pursuant to R 324.511, within 10 days of approval, at the offices of the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909. An additional permit fee is not required.

(6) If a permittee of a well conveys his or her rights as an owner of a well to another person, or ceases to be the authorized representative of the owner of a well, before final completion, then a request for the transfer of the permit to the acquiring person shall be submitted by the acquiring person to the supervisor at the offices of the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, on forms as prescribed by the supervisor. The transfer of the permit may be approved upon receipt of a properly completed request, including the signatures of the permittee of record and the acquiring person, and upon the filing by the acquiring person of the conformance bond or a statement of financial responsibility as required by R 324.210. Pending the transfer of the existing permit, the acquiring person shall not operate the well. The acquiring person shall be required to file an organization report pursuant to R 324.201(2)(g).

(7) A permit for a well shall not be transferred to a person who has been determined to be in violation of any of the following until the permittee has corrected the violation or the supervisor has accepted a compliance schedule and a written agreement has been reached to correct the violations:

- (a) The act.
- (b) These rules.
- (c) Permit conditions.
- (d) Instructions.
- (e) Orders of the supervisor.
- (f) An order of the department of environmental quality.

An additional conformance bond covering the period of the compliance schedule may be required. The conformance bond shall be in addition to the conformance bonds filed pursuant to R 324.212(a) or (b).

(8) If the permittee of a well is under notice because of unsatisfactory conditions at the well site involved in the transfer, then the permit for a well shall not be transferred to a person until the permittee has completed the necessary corrective actions or the acquiring person has entered into a written agreement to correct all of the unsatisfactory conditions.

R 324.210 Conformance bond or statement of financial responsibility requirements.

Rule 210. (1) A person who files an application for a permit to drill and operate a well under R 324.201, or who acquires a well under R 324.206(6), shall file a conformance bond with the supervisor on a form prescribed by the supervisor or shall submit a statement of financial responsibility under subrule (2) of this rule.

(2) A statement of financial responsibility shall consist of all of the following:

(a) A written statement which is signed by the person, which lists data that show that the person meets the criteria specified in subrule (3) of this rule, and which states that the data are derived from an independently audited year-end financial statement.

(b) A copy of an independent certified public accountant's report on examination of the person's financial statements for the latest completed fiscal year.

(c) A special report from the person's independent certified public accountant stating that the accountant has compared the data listed in the statement provided under subdivision (a) of this subrule with the amounts in the corresponding year-end financial statement and that nothing came to the attention of the accountant which caused the accountant to believe that the financial records should be adjusted.

(3) When a person submits a statement of financial responsibility instead of a conformance bond, a person shall meet the criteria of either subdivision (a) or (b) of this subrule, as follows:

(a) A person required to file the statement of financial responsibility shall have all of the following:

(i) Two of the following 3 ratios:

(A) A ratio of total liabilities to net worth of less than 2.0.

(B) A ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities of more than 0.1.

(C) A ratio of current assets to current liabilities of more than 1.5. Projected oil and gas reserves may be utilized in determining current assets only to the extent that the value of the reserves exceeds the projected costs of development and production.

(ii) Net working capital and tangible net worth each of which is not less than 3 times the amount of the conformance bond provided in R 324.212, if the person had elected to file a conformance bond.

(iii) Total assets in Michigan that are not less than 3 times the amount of the conformance bond provided in R 324.212, if the person had elected to file a conformance bond. Projected oil and gas reserves may be utilized in determining current assets only to the extent that the value of the reserves exceeds the projected costs of development and production.

(iv) A written statement from a certified public accountant which states that no matter came to the attention of the accountant which caused him or her to believe that the financial records should be adjusted.

(b) A person required to file a statement of financial responsibility shall have all of the following:

(i) A current rating for his or her most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's.

(ii) A tangible net worth of not less than \$2,000,000.00.

(iii) Total assets in Michigan that are not less than 3 times the amount of the conformance bond provided in R 324.212, if the person had elected to file a conformance bond. Projected oil and gas reserves may be utilized in determining current assets only to the extent that the value of the reserves exceeds the projected costs of development and production.

(4) A person shall submit a statement of financial responsibility to the supervisor not less than 60 days before the date the financial assurance is scheduled to take effect.

(5) After the initial submission of a statement of financial responsibility, the person shall send an updated statement of financial responsibility to the supervisor within 90 days after the close of each succeeding fiscal year.

(6) If a person no longer meets the requirements of subrule (3) of this rule, he or she shall send notice to the supervisor of the intent to establish alternate financial assurance by filing a conformance bond as specified in subrule (1) of this rule. The notice shall be sent, by certified mail, within 90 days after the end of the fiscal year for which the year-end review of the financial records shows that the person no longer meets the requirements. The person shall provide the alternate financial assurance within 120 days after the end of the fiscal year.

(7) The supervisor may, based on a reasonable belief that the person no longer meets the requirements of subrule (3) of this rule, require a report at any time from the person in addition to the information required by subrule (3) of this rule. If the supervisor finds, on the basis of a review of the report or other information, that the person no longer meets the requirements of subrule (3) of this rule, then the supervisor or authorized representative of the supervisor shall notify and inform the person. Within 30 days of the notification, the person shall provide alternate financial assurance by filing a conformance bond as specified in subrule (1) of this rule or shall bring the well to final completion. Failure to comply with this subrule shall be cause for immediate suspension of any or all components of the oil and gas operations on the well.

(8) The supervisor may require additional conformance bonds to ensure compliance with orders of the supervisor, excluding proration, ~~compulsory~~ **statutory** pooling, or spacing orders. The conformance bond shall be in addition to the conformance bonds filed under R 324.212(a), (b), or (c) and shall be required only if the supervisor determines that the existing conformance bond is not adequate to cover the estimated cost of plugging the well and conducting site restoration or other obligations of the permittee under the order. A person is not required to file additional conformance bonds under this subrule if the person has filed a blanket conformance bond or bonds in an aggregate amount of \$250,000.00 or more, under R 324.212(d). Subject to the provisions of R 324.213, the additional conformance bond shall be released when the permittee has complied with all provisions of the orders of the supervisor.

(9) Conformance bonds that were in effect before the effective date of these rules shall remain in effect under the conditions upon which they were filed and accepted by the supervisor. However, in place of conformance bonds that were in effect before the effective date of these rules, a permittee may file conformance bonds or submit a statement of financial responsibility under these rules for wells permitted under the act before the effective date of these rules.

R 324.301 Drilling unit; well location; exceptions.

Rule 301. (1) The following provisions specify requirements for the location and spacing of wells to be drilled for oil or gas, except for injection wells and wells to be drilled in gas storage reservoirs, liquid petroleum gas storage reservoirs, unitized areas, and other specifically designated areas or geological formations where special spacing orders, rules, or determinations are in effect:

(a) The drilling unit for wells to be drilled for oil or gas shall be a legal subdivision of 40 acres, more or less, defined as a governmental surveyed quarter-quarter section of land. The drilling unit shall conform to 1 of the quarter-quarters of a governmental surveyed section of land, with allowances being made for the differences in the size and shape of sections as indicated by official governmental survey plats.

(b) ~~The prescribed well~~ **producing interval** ~~location shall be in compliance with all of the following requirements, as applicable:~~

~~(i) A permit may be granted for the drilling of an exploratory of a well for oil or gas if the bottom hole location is~~ **shall be** not less than 330 feet from the drilling unit boundary.

~~(ii) The bottom hole location of development wells shall be located in a pattern at the same relative position in each drilling unit as that of the discovery well if the discovery well is located not less than 330 feet from the unit boundary. Exceptions for environmental reasons may be granted by the supervisor or authorized representative of the supervisor without a hearing if the bottom hole location is not more than 495 feet from the unit boundary. The uniform spacing of wells specified in this subdivision shall be followed until a special spacing order is adopted after a hearing pursuant to R 324.302 and part 12 of these rules.~~

~~(iii) If the bottom hole location of the discovery well is located more than 495 feet from the unit boundary, then a permit shall not be issued for the drilling of a development well until a hearing has been held to determine the need or desirability of adopting a special spacing order pursuant to R 324.302.~~

~~(iv) An off pattern development well completed in a pool previously spaced pursuant to subrule (2) of this rule, a special spacing order adopted pursuant to R 324.302, or an existing special spacing order or rules that were in effect before the effective date of these rules shall not produce from that pool until a hearing pursuant to part 12 of these rules has been held to determine the need or desirability of granting an exception to these rules or orders.~~

(c) For purposes of interpreting requirements for the location and spacing of wells under these rules, the producing interval location of a well that is not intentionally drilled directionally or horizontally shall be presumed to be directly beneath the well location.

(d) A permit may be issued on a drilling unit that is not totally leased, pooled, or communitized on condition that the application for permit is accompanied by a certified statement establishing that a good faith effort had been made to obtain the lease or leases or to obtain a communitization agreement to form a full drilling unit and that such effort failed. Before such a well is placed on regular production, a pooled drilling unit shall be formed by voluntary agreement or statutory pooling pursuant to R 324.304.

~~(v)-(2)~~ **(2)** The well surface location and associated surface facilities for wells drilled and constructed after the effective date of these rules **September 20, 1996** shall be located not less than 300 feet from existing recorded fresh water wells and reasonably identifiable fresh water wells utilized for human consumption and existing structures used for public or private occupancy.

~~(vi)-(3)~~ **(3)** The well separators, storage tanks, and treatment equipment installed or constructed after the effective date of these rules **September 20, 1996** shall be located not less than 2,000 feet from type I and IIa public water supply wells and not less than 800 feet from type IIb and III public water supply wells, as defined in Act No. 399 of the Public Acts of 1976, as amended, being §325.1001 et seq. of the Michigan Compiled Laws.

~~(2)-(4)~~ **(4)** Exceptions to the location and spacing of wells may be granted in the following instances:

(a) The supervisor or authorized representative of the supervisor issues a permit for an off-pattern or nonconforming drilling unit well after a hearing to determine the need or desirability of issuing the permit. The wells shall be subject to the restricted or adjusted allowables that the supervisor considers necessary to ensure that the owners shall be afforded the opportunity to produce their just and equitable share of the oil and gas from the reservoir and to prevent waste.

(b) The supervisor or authorized representative of the supervisor issues a permit for a well where the surface location is closer than 300 feet from all existing recorded fresh water wells and reasonably identifiable fresh water wells utilized for human consumption and existing structures used for public or private occupancy upon presentation, to the supervisor, of written consent

signed by the owner or owners of all existing fresh water wells and reasonably identifiable fresh water wells utilized for human consumption and existing structures used for public or private occupancy.

(c) The supervisor determines the well surface location or location of associated surface facilities will prevent waste, protect environmental values, and not compromise public safety after a hearing pursuant to part 12 of these rules.

(d) The supervisor approves an application to pool or communitize tracts or mineral interests pursuant to R 324.303(2).

R 324.302 Adoption of special spacing orders.

Rule 302. The development of an oil or gas field ~~after the completion of a discovery well~~ may warrant the adoption of a drilling units and well spacing patterns other than as specified in R 324.301(1). An interested person may request, or the supervisor may schedule, a hearing pursuant to part 12 of these rules to consider the need or desirability of adopting a special spacing order to apply to a designated area, field, pool, or geological strata. The drilling unit established by the special spacing order may be smaller or larger than the basic 40-acre unit pursuant to R 324.301(1)(a).

R 324.303 Voluntary pooling.

Rule 303. (1) The lessees or lessors, or both, of separate tracts or mineral interests that lie partially or wholly within an established drilling unit or larger area may pool or communitize the tracts or interests to form full drilling units or multiples of full drilling units and to develop the units pursuant to the provisions of these rules and the applicable orders of the supervisor.

(2) Persons who pool or communitize the tracts or interests may submit an application to the supervisor to abrogate spacing within the pooled or communitized area. The application shall include a certified copy of the pooling or communitization agreement and the plans for exploration or development. The supervisor may approve the application if all of the following conditions are satisfied:

(a) Waste is prevented.

(b) The drilling of unnecessary wells is prevented.

(c) A **producing interval of a** well is not located closer than 330 feet from the pooled or communitized area boundary ~~or closer than 660 feet from adjacent wells.~~

~~(d) The distance between wells prevents interference.~~

(3) The lessees and lessors of separate tracts or mineral interests that lie partially or wholly within an area encompassing 2 or more full drilling units may voluntarily pool the tracts or interests to form a development unit for the purpose of receiving a permit for a well as an exception to R 324.301(1) or special spacing orders adopted pursuant to R 324.302, if the ~~bottom hole~~ **producing interval** location of the well is found by the supervisor to ensure each producer is afforded the opportunity to use his or her just and equitable share of the reservoir energy and to prevent waste, including the drilling of unnecessary wells.

R 324.304 ~~Compulsory~~ **Statutory** pooling.

Rule 304. The supervisor may require the pooling of tracts or mineral interests within a drilling unit when the owners of the tracts or mineral interests have not agreed, or do not agree, upon the pooling of the interests to form full drilling units pursuant to these rules and the applicable spacing orders. The ~~compulsory~~ **statutory** pooling shall be done on a basis which ensures that

each owner of an interest within a drilling unit is afforded the opportunity to receive his or her just and equitable share of the production from the unit. ~~Compulsory~~ **Statutory** pooling shall be adopted by the supervisor only after a hearing pursuant to part 12 of these rules.

R 324.407 Drilling mud pits.

Rule 407. (1) The supervisor shall prohibit the use of a drilling mud pit if it is determined that the mud pit causes waste.

(2) Drill cuttings, muds, and fluids shall be confined by a pit, tank, or container which is of proper size and construction and which is located as approved by the supervisor or authorized representative of the supervisor.

(3) Only tanks shall be utilized while drilling a well that is located in an area zoned residential before January 8, 1993. The supervisor may grant an exception if the applicant or permittee makes a request for an exception as part of the written application for a permit. The supervisor may grant an exception if an applicant or permittee satisfactorily demonstrates that a municipal water system is utilized or required to be utilized.

(4) Drilling mud pits shall be located and plotted as instructed by the supervisor. Before construction of the mud pit, a permittee shall demonstrate to the supervisor or authorized representative of the supervisor that there is not less than 4 feet of vertical isolation between the bottom of the pit and the uppermost groundwater level. The bottom of the liner shall not be installed within the observed groundwater level as determined while excavating the pit. If groundwater is encountered during or before construction of the pit, then the permittee shall select 1 of the following options and obtain the approval for the option from the supervisor or authorized representative of the supervisor:

(a) The pit shall be designed and constructed so the bottom of the pit is not less than 4 feet above the groundwater level.

(b) The pit shall be designed and constructed so the bottom of the pit is above the groundwater level, but less than 4 feet above the groundwater level, and during encapsulation the pit contents shall be solidified using a method approved by the supervisor.

(c) The pit shall be relocated at the well site as approved by the supervisor or authorized representative of the supervisor.

(d) Tanks shall be used, and drilling muds disposed of, at an approved off-site location.

(5) Drilling mud pits shall be constructed as instructed by the supervisor and shall be in compliance with both of the following minimum requirements:

(a) Pits shall be constructed with rounded corners and side slopes of not less than 20 degrees measured from the vertical.

(b) The bottom and sides of the pit shall be free of objects that could penetrate the liner.

(6) Drilling mud pits shall be lined as instructed by the supervisor and shall be in compliance with all of the following minimum requirements:

(a) Pits shall be lined with 20-mil virgin polyvinyl chloride liners as approved by the supervisor or with other liners that meet or exceed the 20-mil virgin polyvinyl chloride liner requirement.

(b) Ample liner material shall be installed in a manner to allow for sags and material loading to reduce stress on the liner and allow for a minimum 10-foot flat apron on all sides, including enough liner material to underlay the drilling mud tank, salt washer, and shale shaker.

(c) The bottom of the lined pit shall be weighted with earthen material or water before anchoring the ends of the liner on the surface or placing drilling muds in the pit.

(d) Ripping, tearing, puncturing, or other destruction of a liner that may cause loss of fluids is prohibited.

(e) Liner field seams are prohibited, except for liner field seams that result from failures in the liner due to abrasion or accidental perforation, which shall be immediately repaired in the field using the manufacturer's recommended procedures.

(7) Drilling mud pits shall be utilized as instructed by the supervisor and shall be in compliance with all of the following minimum requirements:

(a) Solid salt cuttings shall not be released to inground drilling mud pits. Solid salt cuttings obtained while drilling below the base of the Detroit River Anhydrite to the top of the Amherstburg formation and while drilling through the formations in the Salina Group shall be collected in a container at the shale shaker and either diverted to a device that will result in the dissolving of the solid salt cuttings and the proper disposal of the resultant brine pursuant to R 324.703 or removed from the drilling site to a licensed disposal facility.

(b) Twenty-four months after the effective date of these rules, only the following may be placed in a lined pit:

(i) Water-based drilling muds generated or utilized while drilling above the base of the Detroit River Anhydrite.

(ii) Drilling fluids generated or utilized while drilling above the base of the Detroit River Anhydrite.

(iii) Cuttings obtained while drilling above the base of the Detroit River Anhydrite.

(iv) Cuttings and the solid fraction of drilling muds generated or utilized while drilling below the base of the Detroit River Anhydrite, other than drill cuttings prohibited by subdivision (a) of this subrule, if the cuttings and the solid fraction of drilling muds do not contain free liquids as determined by the United States environmental protection agency, paint filter liquids test, method 9095, September 1986 edition, which is adopted by reference in these rules. Copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained without charge as of the time of adoption of these rules from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, or from the United States Environmental Protection Agency, Office of Research and Development, 26 West Martin Luther King Boulevard, Cincinnati, Ohio 45268. A permittee shall provide the necessary equipment at the site of the drilling rig to perform the paint filter liquids test.

(v) Water-based drilling muds and entrained cuttings, other than drill cuttings prohibited by subdivision (a) of this subrule, which are generated or utilized while drilling below the base of the Detroit River Anhydrite, which contain weighting materials or lost circulation materials, and which cannot reasonably be treated to eliminate free liquids as determined by the paint filter liquids test identified in paragraph (iv) of this subdivision, if approved by the supervisor or authorized representative of the supervisor.

(vi) Native soils.

(vii) Cementing materials.

(viii) Stiffening or solidification materials approved by the supervisor.

(c) During the initial 24 months after the effective date of these rules, only the following may be placed in a lined pit:

(i) Water-based drilling muds.

(ii) Drilling fluids.

- (iii) Cuttings that are not prohibited by subdivision (a) of this subrule.
- (iv) Native soils.
- (v) Cementing materials.
- (vi) Stiffening or solidification materials approved by the supervisor.
- (d) Machine oil, refuse, completion and test fluids, liquid hydrocarbons, or other materials may not be placed in a lined pit.
- (e) A permittee of a well shall, before encapsulation, test the fluids and cuttings remaining in the pit to determine the concentrations of benzene, ethylbenzene, toluene, and xylene and provide certification to the supervisor or authorized representative of the supervisor of the test results, except that a permittee is not required to test the fluids and cuttings remaining in the pit for benzene, ethylbenzene, toluene, and xylene if the well was drilled with water from a source approved by the supervisor and if, during the drilling operation, liquid hydrocarbons were not encountered.
- (8) If a drilling mud pit is not closed immediately after reaching drilling completion, then a permittee of a well shall fence the perimeter of the drilling mud pit as soon as practical after drilling completion, but not later than 30 days after drilling completion, to prevent public access.
- (9) A permittee of a well shall close a drilling mud pit as instructed by the supervisor and be in compliance with all of the following minimum requirements:
 - (a) All free liquids above the solids in the pit shall be removed to the maximum extent practical and disposed of in an approved disposal well or used in a manner approved by the supervisor.
 - (b) All drilling mud pits shall be stiffened before encapsulation, except as provided in subrule (4)(b) of this rule. Earthen materials shall be mixed with the pit contents to stiffen the pit contents sufficiently to provide physical stability and support for the pit cover. An alternative pit stiffening process approved by the supervisor may be used at the option of a permittee or if required by the supervisor.
 - (c) The drilling mud pit shall be carefully encapsulated and buried as soon as practical after drilling completion, but not more than 6 months after drilling completion.
 - (d) Apron edges of the liner shall be folded over the pit proper.
 - (e) The drilling mud pit shall be totally covered with a separate piece of material that meets or exceeds the specifications of a 20-mil virgin polyvinyl chloride cover as approved by the supervisor. The cover shall extend beyond the outer edges of the pit to cover and entirely encapsulate the pit and shall be sloped to provide surface drainage away from the pit.
 - (f) The drilling mud pit shall be buried not less than 4 feet below the original ground grade level.

R 324.411 Cementing.

Rule 411. Well casing shall be cemented by the pump and plug method or by a method approved by the supervisor and allowed to set undisturbed at static balance with the casing in tension, with surface pressure released, and with no backflow until the tail-in slurry reaches 500 psi compressive strength, but for not less than 12 hours; however, if backflow occurs, then the surface pressure shall not be released. The cement mixture shall be of a composition and volume approved by the supervisor or authorized representative of the supervisor. The casing shall be pressure-tested before the cement plugs are drilled or the casing perforated. The pressure at the top of the cement shall be equal to the expected operating pressure of the well; however, the test pressure shall not exceed the API specification for hydrostatic test pressure for new casing, API specification 5CT, specification for casing and tubing, April 1995, fifth edition,

which is adopted by reference in these rules. Copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$42.00 each, and from the American Petroleum Institute, 1220 L Street NW, Washington, DC 20050, at a cost as of the time of adoption of these rules of \$42.00 each.

R 324.413 Drilling to strata beneath gas storage reservoirs.

Rule 413. Except when special orders have been adopted for specific reservoirs, areas, or practices, all of the following provisions about drilling to strata beneath gas storage reservoirs shall apply:

(a) The applicant shall send a copy of the entire drilling permit application and all revisions to the gas storage operator when the application and revisions are submitted to the supervisor. The gas storage operator shall have 10 business days to provide written comments to the supervisor.

(b) Drilling operations shall proceed through gas storage zones only when the gas storage reservoir pressure exerts a pressure gradient of not more than 0.50 psig per foot of true vertical depth to the top of the gas storage zone.

(c) Drilling rigs for wells drilled through gas storage reservoirs shall use rotary tools and shall have blowout prevention equipment pursuant to R 324.406. Complete operational checks of the well control appliances shall be made every 8 hours, with the well control system initially checked by pressure testing and checked again before drilling into the gas storage reservoir. The 8-hour checks shall be recorded in the daily driller's log.

(d) Surface casing and any other protective casing string required above the gas storage reservoir shall be new casing manufactured in compliance with the API specifications for casing and tubing as adopted by reference in R 324.411, the properties and design of which have been approved by the supervisor or authorized representative of the supervisor. Surface casing and any other protective casing string shall be designed to withstand the required test pressures as set forth in R 324.410(3). Surface casing shall be set pursuant to R 324.408. Surface casing shall be cemented to the surface and not disturbed for a period of 18 hours after completion of cementing. Cement shall attain a minimum compressive strength of 500 psi before disturbing the casing or resuming drilling. Surface casing, other protective casing strings, and blowout preventers shall be tested pursuant to R 324.406(4) before drilling out the cement, unless otherwise specified by the supervisor or authorized representative of the supervisor.

(e) Drilling fluid shall be circulated and conditioned at a point not less than 100 feet above the gas storage reservoir and shall be maintained with the following characteristics until the gas storage reservoir is cased off:

(i) Drilling fluid density shall be sufficient to provide a hydrostatic pressure of not less than 100 psig above the anticipated bottom hole pressure of the gas storage reservoir.

(ii) When drilling through the storage reservoir, the drilling fluid shall have a maximum fluid loss of 15 cubic centimeters or less as specified by the API standard procedure for testing drilling fluids, API RP 13B-1, entitled "Recommended Practice Standard Procedure for Field Testing Water-Based Drilling Fluids," June 1, 1990, first edition, which is adopted by reference in these rules. Copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~

Office of Oil, Gas, and Minerals, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$30.00 each, and from the American Petroleum Institute, 1220 L Street NW, Washington, DC 20050, at a cost as of the time of adoption of these rules of \$30.00 each.

(f) Hole size shall be large enough to allow the running of a separate intermediate casing, which shall be set through each gas storage reservoir. The casing shall be new and conform to the API specification and performance properties for casing, tubing, and drill pipe, API BULL 5C2, entitled "Bulletin on Performance Properties of Casing, Tubing and Drill Pipe, May 31, 1987," twelfth edition, which is adopted by reference in these rules. Copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$35.00 each, and from the American Petroleum Institute, 1220 L Street NW, Washington, DC 20050, at a cost as of the time of adoption of these rules of \$35.00 each. The gas storage operator shall be allowed to review the intermediate casing design and cementing program before implementation. Intermediate casing shall be set in competent stratum approximately 100 feet below the base of the gas storage reservoir or set as required by the supervisor or authorized representative of the supervisor. Intermediate casing shall be designed for the maximum gas storage reservoir operating pressure using a minimum collapse design factor of 1.125, a minimum burst design factor of 1.25, and a minimum tension design safety factor of 1.6. The minimum hole size for a given size casing shall be pursuant to R 324.410(4). The hole shall be properly conditioned before running casing by circulating the drilling fluid at a rate equal to the drilling circulating rate and by utilizing a circulating time equivalent of not less than twice the hole displacement. Casing shall be equipped with a sufficient number of centralizers and scratchers to ensure good cement distribution and shall include centralizers above and below the gas storage reservoir. All centralizers shall conform to the API for casing centralizers, API specification 10D, entitled "Specification for Bow-Spring Casing Centralizers," January 1, 1995, fifth edition, which is adopted by reference in these rules. Copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$27.00 each, and from the American Petroleum Institute, 1220 L Street NW, Washington, DC 20050, at a cost as of the time of adoption of these rules of \$27.00 each. Casing shall include float equipment that will prevent movement after the cementing operation is completed. If conditions allow, casing shall be rotated or reciprocated slowly during cementing. The mill varnish shall be removed from the casing shoe to a point 100 feet above the storage reservoir. An acceptable spacer that is at least as dense as the drilling fluid shall precede the cement to aid in removing the drilling fluid. Cement mix water shall be tested before the cementing operation to ensure compatibility with the cement. The casing shall be cemented using a sufficient cement volume to circulate cement to the surface. Multistage cementing operations and external casing packers may be used only with the approval of the supervisor or authorized representative of the supervisor. Cemented casing shall not be disturbed for a period of 18 hours. Cement shall also attain a minimum compressive strength of 500 psi based on cement tables before disturbing the

casing or resuming drilling. Absent backflow, the internal casing pressure shall be relieved after the cementing operation. Intermediate casing and the blowout preventers shall be tested to a pressure of not less than 1,500 psig at the surface or as otherwise specified by the supervisor or authorized representative of the supervisor, and the pressure shall be held for not less than 20 minutes before drilling out the cement.

(g) When additional intermediate casing is run inside the innermost storage zone casing, below the base of the Detroit river group, the intermediate casing string and cementing shall be pursuant to these rules and the orders and instructions issued by the supervisor.

(h) A centralized cement bond evaluation log or equivalent test approved by the supervisor shall be performed on the storage zone casing before running subsequent casing or plugging the hole, but not sooner than 48 hours after cementing the storage zone intermediate casing. A description of problems occurring while running or cementing casing shall be recorded in the daily driller's log. If unsatisfactory conditions are indicated, including unsatisfactory cement bonding, gas to the surface in the cellar area, or gas pressure on the surface or intermediate casing string annulus, and additional testing does not provide sufficient proof the unsatisfactory condition does not exist, then the permittee shall initiate remedial action before additional casing is installed.

(i) Wellhead equipment and assemblies shall conform to the API specification for wellhead equipment, and shall include slip and seal assemblies for all casings, unless an exception is approved by the supervisor or authorized representative of the supervisor. The API specification for wellhead equipment is specification 6A, entitled "Specification for Wellhead and Christmas Tree Equipment," February 1, 1996, seventeenth edition, which is adopted by reference in these rules. Copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$55.00 each, and from the American Petroleum Institute, 1220 L Street NW, Washington, DC 20050, at a cost as of the time of adoption of these rules of \$55.00 each. The wellhead shall be assembled to allow the monitoring of the pressure of each annulus at the surface.

(j) The permittee shall notify the gas storage operator before moving personnel or equipment, or both, onto the well location to ensure all of the following:

(i) That the proposed well location does not endanger gas storage facilities or storage operations.

(ii) That the movement of drilling rigs, related trucks, and equipment does not endanger gas storage facilities or storage operations.

(iii) That the gas storage operator is allowed to witness drilling operations that impact the gas storage reservoir.

R 324.503 Well completion operations.

Rule 503. (1) A permittee of a well shall use proper well control measures to avoid an uncontrolled flowing of the well. All fluids **from well completion operations**, including **flowback fluid**, acid, load water, chemicals, and associated hydrocarbons, shall be produced or swabbed back to approved containers. A permittee of a well shall not use earthen pits or reservoirs to contain fluids produced from the well.

(2) A permittee shall notify the supervisor or authorized representative of the supervisor when

a well completion operation starts.

R 324.511 Change of well status.

Rule 511. (1) A permittee of a well who desires to change the status of a well by an oil and gas operation, including temporary abandonment **or high volume hydraulic fracturing**, except as allowed by R 324.704; and additional acid or other stimulation treatment, shall file an application for change of well status with the supervisor. The application shall set forth, in detail, the kind of oil and gas operation to be accomplished and the plan for protecting all oil, gas, brine, or fresh water strata the well has penetrated. A permittee shall not begin the oil and gas operation until he or she has received approval from the supervisor or authorized representative of the supervisor and provided notification to the supervisor or authorized representative of the supervisor of the date the oil and gas operation will commence.

(2) A permittee of a well who changes the status of a well shall file, with the supervisor, within 60 days, a complete change of well status record on forms prescribed by the supervisor, except that a record shall not be filed when the change of well status operation is for temporary abandonment purposes.

R 324.613 Production from directionally drilled wells.

Rule 613. (1) An allowable production rate shall not be assigned or production permitted from a directionally drilled well until a certified well survey has been furnished by the permittee of a well to the supervisor. ~~Directionally~~ **A directionally drilled wells completed at a point in the objective formation with a producing interval** that is contrary to the established ~~well-spacing pattern~~ **boundary setback of the drilling unit or pooled or communitized area** shall be limited or restricted in the same manner as provided for regularly drilled wells located contrary to ~~spacing~~ **the boundary setback of the drilling unit or pooled or communitized area**.

(2) The production from directionally drilled wells that can be produced contrary to the established ~~well-spacing pattern~~ **boundary setback of the drilling unit or pooled or communitized area** shall be limited or restricted in the same manner pursuant to R 324.301~~(2)~~**(4)(a)** for regularly drilled wells located contrary to the applicable ~~spacing pattern~~ **boundary setback of the drilling unit or pooled or communitized area**. A permittee of a well shall not conduct production testing from a directionally drilled well until a certified well survey has been furnished to, and approved by, the supervisor or authorized representative of the supervisor pursuant to R 324.421. Injection wells utilized for gas storage are exempt from this subrule.

R 324.705 Disposition of brine.

Rule 705. (1) A permittee of a well is responsible for the proper disposal of all brines produced in association with oil or gas production, or both, or brines accumulated in drilling mud pits or tanks and shall ensure that waste, as defined in section 61501(p) of the act, will not occur. A permittee may convey or transfer brines for other purposes if the brines are in compliance with the conditions provided in subrule (3) of this rule. A permittee shall be required to maintain records on the disposition of all brines pursuant to subrule (4) of this rule, and a permittee shall not have continuing liability relative to the transport or application of the brines after the brines are properly conveyed or transferred.

(2) Upon the effective date of these rules, a permittee of a well shall not use brines produced in association with drilling for oil and gas, or both, and accumulated in drilling mud pits for ice or

dust control purposes.

(3) Twelve months after the effective date of these rules, a permittee shall dispose of all brines as provided in R 324.703 or shall use the brines in a manner approved by the supervisor; however, some brines may be conveyed or transferred and used for ice and dust control and road stabilization if all of the following conditions are satisfied:

(a) Brines shall not be used for ice and dust control and road stabilization if the brines are obtained from wells containing more than 20 ppm hydrogen sulfide in the gas stream, unless it can be shown that there is less than a 500-ppm-hydrogen sulfide concentration present in the brine.

(b) The brines shall contain a 20,000-milligrams-per-liter or more concentration of calcium.

(c) The brines shall contain less than a 1,000-micrograms-per-liter concentration of each of the following aromatic hydrocarbons:

(i) Benzene.

(ii) Ethylbenzene.

(iii) Toluene.

(iv) Xylene.

(d) Only brines that have been approved by the supervisor or authorized representative of the supervisor may be exempt from the disposal requirements of R 324.703. For a permittee to obtain approval to exempt brine from the disposal requirements of R 324.703, all of the following conditions shall be satisfied:

(i) The brine shall be tested annually within 90 days of January 1 of each year by the person seeking authorization to utilize the brine for other purposes. The brine shall be tested using any of the following procedures:

(A) Method 200.7 ICP-AES, entitled "Method for Trace Element Analysis of Water and Wastes, Methods for Chemical Analysis of Water and Wastes," March 1983 edition.

(B) Method 6010A, entitled "Inductively Coupled Plasma, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," 1984 edition 3.

(C) Method 602, entitled "Purgeable Aromatics, Guidelines Establishing Test Procedures for the Analysis of Pollutants," 40 C.F.R. part 136, appendix A, revised July 1990.

(D) Method 8020A, "Aromatic Volatile Organics by Gas Chromatography, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," 1984 edition 3.

(E) Method 8240A, entitled "Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry: Packed Column Technique, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," 1984 edition 3.

(F) Method 8260A, entitled "Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry: Capillary Column Technique," 1984 edition 3.

(G) Method 325.3, entitled "Chloride (Colorimetric, Automated Ferricyanide), Guidelines Establishing Test Procedures for the Analysis of Pollutants," 40 C.F.R. part 136, appendix A, revised July 1990.

(H) Method 4500-CLE, entitled "Chloride, Methods for the Determination of Organic Compounds in Drinking Water" and supplement I, December 1988 and July 1990 editions.

The testing methods are adopted by reference in these rules and copies are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained without charge from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, or from the United States

Environmental Protection Agency, Office of Research and Development, 26 West Martin Luther King Boulevard, Cincinnati, Ohio 45268.

(ii) The sample of brine used for analysis shall be obtained from the point of loading of the storage tank where the brine is first separated from the production stream.

(iii) A chemical analysis of each brine source showing the concentrations of all of the following shall be submitted to the supervisor or authorized representative of the supervisor within 30 days of the completion of the analysis:

- (A) Chloride.
- (B) Hydrogen sulfide.
- (C) Calcium.
- (D) Benzene.
- (E) Ethylbenzene.
- (F) Toluene.
- (G) Xylene.

(iv) The chemical analysis shall include all of the following information:

- (A) The well name.
- (B) Permit number.
- (C) Permittee.
- (D) Location of the individual well.

(E) If the brine is obtained from a tank battery or central production facility, the name, number, permittee, and location of the tank battery or central production facility.

(4) A permittee of a well shall maintain records for 2 years on the disposition of all brines produced in association with oil or gas production, or both. The records shall indicate dates, volumes, recipient, transporter, destination, and proof of delivery. If the person authorized to utilize the brine for other purposes receives the brine at an unattended loading site, then the person shall provide the permittee with a signed record describing the date, volume, time, destination, and proof of delivery. A permittee of a well shall make the records available for inspection by the supervisor or authorized representative of the supervisor at all times. A permittee of a well shall protect the records from damage or destruction due to preventable cause.

(5) A permittee of a well shall ensure that brine which is in compliance with the conditions listed in subrule (3) of this rule is also in compliance with all applicable state and federal laws and regulations.

R 324.1015 Nuisance noise; “decibel,” “decibels on the a-weighted network,” “noise-sensitive area,” and “nuisance noise” defined.

Rule 1015. (1) A person shall not cause a nuisance noise in the production, handling, or use of oil, gas, or brine or in the handling of any product associated with the production or use of oil, gas, or brine.

(2) If the supervisor or authorized representative of the supervisor receives 1 or more complaints of noise heard by the complainant at noise-sensitive areas that is attributed to a surface facility, then the supervisor may require the permittee to collect decibel readings to determine the sound levels at the noise-sensitive areas and at a distance of 1,320 feet from the facility. If the sound level of the facility is more than 45 decibels on the a-weighted network at a distance of 1,320 feet from the facility, then the supervisor or authorized representative of the supervisor may find that a nuisance noise exists after considering all applicable information,

including the distance between the surface facility and the noise-sensitive areas, the sound levels at the noise-sensitive areas, and sound attributable to sources other than the surface facility. The supervisor or authorized representative of the supervisor may require appropriate noise control measures to reduce the decibel levels. If noise control measures are required, then the permittee shall submit, to the supervisor or authorized representative of the supervisor, for approval, an abatement plan and schedule for implementation within 30 days of a determination by the supervisor or authorized representative of the supervisor that noise control measures are necessary.

(3) As used in this rule:

(a) "Decibel" means a unit of sound level on a logarithmic scale measured relative to the threshold of audible sound by the human ear in compliance with the ANSI standard 1.1, entitled "Acoustical Terminology," 1994 edition, which is adopted by reference in these rules. Copies of the standard are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$100.00 each, and from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, at a cost as of the time of adoption of these rules of \$100.00 each.

(b) "Decibels on the a-weighted network" means decibels measured on the a-weighted network of a sound level meter, as specified in the ANSI standard 1.4, entitled "Specifications for Sound Level Meters," 1983 edition, which is adopted by reference in these rules. Copies of the standard are available for inspection at the Lansing office of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey Division~~ **Office of Oil, Gas, and Minerals**, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$70.00 each, and from the American National Standards Institute, 11 West 42nd Street, New York, NY 10036, at a cost as of the time of adoption of these rules of \$70.00 each.

(c) "Noise-sensitive area" means a residential dwelling, place of worship, school, or a hospital and also means an existing site that is maintained for public recreation for which quiet is a primary consideration in the use of the site.

(d) "Nuisance noise" means any noise from a well or its associated surface facilities that causes injurious effects to human health or safety or the unreasonable interference with the comfortable enjoyment of life or property.

R 324.1103 Metallic component standards.

Rule 1103. A permittee of a well shall ensure that metallic components of the well, flow line, and associated surface facilities installed during the course of drilling, completing, testing, producing, repair, workover, or servicing operations after September 2, 1987, where applicable, are in compliance with or exceed the standards for use in a hydrogen sulfide environment set forth in the NACE standard MR0175-2000, 2000 edition, entitled "Sulfide Stress Cracking Resistant Metallic Material for Oil Field Equipment," which is adopted by reference in these rules. Copies may be inspected at the Lansing office or field offices of the ~~geological survey division~~ **office of oil, gas, and minerals** of the department of environmental quality. Copies may be obtained from the Michigan Department of Environmental Quality, ~~Geological Survey~~

Division Office of Oil, Gas, and Minerals, P.O. Box 30256, Lansing, Michigan 48909, at a cost as of the time of adoption of these rules of \$50.00 each, and from the National Association of Corrosion Engineers, P.O. Box 218340, Houston, Texas 77218, at a cost as of the time of adoption of these rules of \$50.00 each.

R 324.1202 Petition for hearing; contents.

Rule 1202. (1) A proper written petition for a hearing, except for the material filed pursuant to subdivisions (e) and (f) of this subrule, shall be filed on 8 1/2 by 11-inch paper and shall contain at least all of the following information:

- (a) The name and address of petitioner.
- (b) A specific statement of the matters asserted or relief sought indicating the rule, order, or section of the act applicable to the petition.
- (c) Property descriptions, locations, sections, townships, and counties relating to the matter to be heard.
- (d) The names and last known addresses of the last record owners, lessees, lessors, or other parties of record in the register of deeds office who own interests in the lands that are the subject of the petition.
- (e) A map of the area to be affected and of the contiguous property. Lease ownership and well locations within 1,320 feet of the area to be affected shall be identified.
- (f) Other maps, plats, and exhibits that may be useful in considering the matter to be heard.
- (g) The name and address of the newspaper circulated in the county or counties where the affected lands are located.
- (h) A copy of a permit application and attachments pertinent to the matters asserted in the petition.
- (i) The name, address, and telephone number of the representative or representatives of the petitioner to whom inquiries can be made.

(2) All of the following additional information shall be filed with the petition when a spacing or proration order is to be considered:

- (a) The size, shape, and orientation of the proposed drilling unit.
- (b) The well spacing pattern to be proposed.
- (c) The surface geographic area to be included in the spacing order, and the geologic formation or formations to be spaced or prorated.
- (d) Well production, testing history, and other applicable reservoir and geological data.
- (e) Proposed daily well allowables, if applicable.

(3) A petition to establish secondary recovery operations pursuant to R 324.612 shall also include all of the following information:

- (a) Applicable seismic lines, profiles, and interpretation showing seismic outlines or boundaries of reservoir structure and the geologic structure and area to be impacted by the operations.
- (b) Appropriate geologic information, such as structural cross sections and productive areas, thickness isopach, and other essential maps.
- (c) Applicable reservoir engineering data, such as the following:
 - (i) Pressure versus time.
 - (ii) Pressure versus oil production.
 - (iii) Reservoir rock and fluid properties.
 - (iv) Primary production.

- (v) An estimated forecast of oil recoveries.
- (vi) Estimated economics of secondary recovery project.
- (d) A plan that shows the locations of existing production wells, proposed production wells, and proposed injection wells and a facilities plan that includes schematics that show the locations of existing and proposed flow lines and wells and associated surface facilities.
- (e) If groundwater is to be injected, a hydrogeologic investigation report of the source aquifer.
- (4) The supervisor may return a petition that is not in conformance with these rules and may include a list of the deficiencies of the petition.
- (5) All of the following additional information shall be filed with the petition when ~~compulsory~~ **statutory** pooling is to be considered:
 - (a) The ownership of oil and gas interests within the drilling unit and a specific description of the nature and extent of the interests sought to be pooled.
 - (b) Sworn statements that indicate, in detail, what action the petitioner has taken to obtain a voluntary unit.
 - (c) Whether or not the petitioner desires to drill or operate the unit, or both, and, if not, the name of the party nominated as operator and the recommendation of the petitioner as to the arrangements that are just and equitable to all owners within the drilling unit.
 - (d) The estimated costs of drilling, completing, and equipping the well, on a form provided by the supervisor, and additional compensation proposed for the risk associated with the drilling and equipping of the well.

R 324.1206 Final decision or order.

Rule 1206. (1) The supervisor shall issue a final decision or order as a result of a hearing held under R 324.1205 or as a result of the procedure pursuant to R 324.1205(1)(c) after giving due consideration to all of the following:

- (a) The record.
- (b) The supervisor's experience, technical competence, and specialized knowledge.
- (c) The proposal for decision, if one is issued, and exceptions to the proposal for decision, replies to exceptions, and, if permitted by the supervisor, oral arguments and briefs.
- (d) The advice or recommendations of the representative of the supervisor when required or appropriate.
- (e) The stipulations or agreements that the contesting parties have placed on the record at a hearing or submitted in writing to the supervisor or the hearings officer.
- (f) The act and rules.

(2) The final written decision or order of the supervisor shall be furnished to the petitioner. The petitioner shall serve copies, by first-class mail, to all persons who were mailed a notice of the hearing, who filed an appearance at the hearing, or who otherwise requested a copy of the final written decision.

(3) When a hearing is scheduled at the initiative of the supervisor, the supervisor shall serve copies of the final written decision or order, by first-class mail, to all persons who filed an answer, who filed an appearance at the hearing, or who otherwise requested a copy.

(4) After the hearing on a petition for an order to pool and after thorough consideration of the evidence and testimony submitted, the supervisor shall either rule that pooling is not necessary to prevent waste or shall enter an order pooling the separately owned tracts and interests within the drilling unit. The pooling order shall authorize 1 of the owners within the affected unit to drill and operate the well within the affected unit and provide that the well shall be commenced

within 90 days if drilling of the well has not already commenced, unless otherwise specified in the pooling order. The pooling order is null and void as to all parties and interests with respect to any well that has not commenced within 90 days after the date of the order. The order shall set forth the terms and conditions under which each of the owners may share in the working interest ownership of the well drilled or to be drilled on the pooled unit and for the sharing of any production from the well. The order shall provide for conditions under which each mineral or working interest owner who has not voluntarily agreed to pool all of the owner's mineral or working interest in the pooled unit may share in the working interest share of production or be compensated for the owner's working interest within the pooled unit according to either of the following provisions:

(a) Pay to the party authorized to drill, or who has drilled, the well that owner's proportionate share of the actual cost of drilling, completing, equipping, and operating the well in the pooled unit that the owner elects to participate in, or give bond for the payment of the share of the costs that have been, or are subsequently, actually incurred, whether the well is drilled as a producer or a dry hole.

(b) As to each well that the owner does not elect to participate in as provided in subdivision (a) of this subrule, if the well has been, or is subsequently, completed as a producer, authorize the operator of the well to take out of the nonparticipatory interest's share of production from the well the party's share of the cost of drilling, completing, equipping, and operating the well, plus an additional percentage of the costs that the supervisor considers appropriate compensation for the risks associated with drilling a dry hole and the mechanical and engineering risks associated with the completion and equipping of each well.

(5) Each nonparticipating owner who has not elected to participate in the drilling of any well by agreeing to pay the owner's working interest share of the costs shall make an election, within 10 days of receipt by the owner of the supervisor's certified mail copy of the order, as to which alternative in subrule (4)(a) or (b) of this rule the owner will select. If the nonparticipating party does not notify the supervisor in writing within 10 days of the owner's election as to any well proposed for the pooled unit, then the owner shall be considered to have elected the alternative in subrule (4)(b) of this rule. For the type of ~~compulsory~~ **statutory** pooling order specified in this rule, the owner of an unleased mineral interest shall be treated as a working interest owner to the extent of 100% of the interest owned in the pooled unit. The unleased mineral interest shall be considered to be subject to a 1/8 royalty interest, which shall be free of any withholding for payment of any costs of drilling, completing, equipping, or operating the well to be drilled. All operations, including, the commencement, drilling, completing, equipping, or operation of a well, upon a portion of a drilling unit for which pooling has been ordered shall be considered for all purposes to be the conducting of operations upon each separately owned tract in the drilling unit. The portion of the production allocated to a separately owned tract or separately owned interest included in a drilling unit shall, when produced, be considered for all purposes to have been actually produced from the separately owned tract or tracts by a well drilled in the drilling unit.

PART 14. HIGH VOLUME HYDRAULIC FRACTURING

R 324.1401 Definitions.

Rule 1401. (1) As used in these rules:

(a) “Adverse resource impact,” “assessment tool,” “cold-transitional river system,” “cool river system,” “site-specific review,” “warm river system,” “withdrawal,” “zone A withdrawal,” “zone B withdrawal,” “zone C withdrawal,” and “zone D withdrawal,” have the same meanings as in section 32701 of the act.

(b) “Available water source” means a reasonably identifiable fresh water well used for human consumption for which the water well owner has given written consent for sampling and testing and to having the sample data obtained made available to the public.

(c) “Chemical Abstracts Service (CAS) Number” means the unique identification number assigned to a chemical by the division of the American Chemical Society that is the globally recognized authority for information on chemical substances.

(d) “Chemical additive” means a product composed of one or more chemical constituents that is intentionally added to a primary carrier fluid to enhance the characteristics of hydraulic fracturing fluid.

(e) “Chemical constituent” means a discrete chemical with its own specific name or identity, such as a CAS number, that is contained in a chemical additive.

(f) “Chemical family” means a group of elements or compounds that have similar physical and chemical characteristics and have a common general name.

(g) “Flowback fluid” means hydraulic fracturing fluid recovered from a well after completion of a hydraulic fracturing operation and before the conclusion of test production under R 324.606.

(h) “High volume hydraulic fracturing” means a hydraulic fracturing well completion operation that is intended to use a total volume of more than 100,000 gallons of primary carrier fluid. If the primary carrier fluid consists of a base fluid with two or more components, the volume shall be calculated by adding the volumes of the components. If one or more of the components is a gas at prevailing temperatures and pressures, the volume of that component or components shall be calculated in the liquid phase.

(i) “Hydraulic fracturing” means a well completion operation that involves pumping fluid and proppants into the target formation to create or propagate artificial fractures, or enhance natural fractures, for the purpose of improving the deliverability and production of hydrocarbons. Hydraulic fracturing does not include other stimulation completion techniques such as acid treatments which do not use proppants.

(j) “Large volume water withdrawal” means a water withdrawal intended to produce a cumulative total of over 100,000 gallons of water per day when averaged over a consecutive 30-day period.

(k) “Primary carrier fluid” means the base fluid, such as water, into which chemical additives are mixed to form the hydraulic fracturing fluid.

(l) “Proppant” means sand or any natural or man-made material that is used in a hydraulic fracturing completion to prop open the artificially created or enhanced fractures once the treatment is completed.

(m) “Trade secret” means any confidential formula, pattern, device, or compilation of information that is used in a person’s business, and that gives the person an opportunity to obtain an advantage over competitors who do not know or use it.

R 324.1402 Permitting of high volume hydraulic fracturing for oil and gas wells.

Rule 1402. (1) In addition to the requirements under R 324.201, a person applying for a permit to drill and operate shall provide a statement as to whether high volume hydraulic fracturing is expected to be utilized in completion of the proposed well.

(2) A permittee of a well shall not begin a large volume water withdrawal for a high volume hydraulic fracturing operation without approval of the supervisor or authorized representative of the supervisor. A permit applicant or permittee shall make a written request for approval to conduct a large volume water withdrawal and shall file the request with the supervisor at least 14 days before the permit applicant or permittee intends to begin the withdrawal. The request may be filed with the application for a permit to drill and operate a well or may be provided separately to the supervisor or authorized representative of the supervisor. The request shall include all of the following information:

(a) A water withdrawal evaluation utilizing the assessment tool accessed at <http://www.miwwat.org/> or at a location otherwise designated by the supervisor.

(b) Information on the proposed withdrawal including:

(i) Proposed total volume of water needed for hydraulic fracturing well completion operations.

(ii) Proposed number of water withdrawal wells.

(iii) Aquifer type (drift or bedrock).

(iv) Proposed depth of water withdrawal wells, in feet below ground surface.

(v) Proposed pumping rate and pumping schedule of each water withdrawal well.

(vi) Available well logs of all recorded fresh water wells and reasonably identifiable freshwater wells within 1,320 feet of water withdrawal location.

(c) A supplemental plat of the well site showing the following:

(i) Proposed location of water withdrawal wells (latitude/longitude).

(ii) Location of all recorded fresh water wells and reasonably identifiable freshwater wells within 1,320 feet of water withdrawal location(s).

(iii) Proposed freshwater pit impoundment, containment, location, and dimensions.

(d) A contingency plan to provide for mitigation of the loss of water availability in any fresh water well within 1320 feet of the proposed large volume water withdrawal under either of the following circumstances:

(i) The loss of water availability is found to be caused by the large volume water withdrawal.

(ii) The loss of water availability occurs while the large volume water withdrawal is being conducted, in which case the mitigation shall continue until such time as the loss of water availability ceases or is found not to have been caused by the large volume water withdrawal.

(3) An application for change of well status for which a large volume water withdrawal is expected to be utilized for high volume hydraulic fracturing shall include the information required under subrule (1).

(4) If the assessment tool designates the proposed withdrawal as a zone A withdrawal, or a zone B withdrawal in a cool river system or a warm river system, the supervisor shall approve the withdrawal.

(5) If the assessment tool designates the proposed withdrawal as a zone B withdrawal in a cold-transitional river system, or a zone C or zone D withdrawal, the permit applicant or permittee may submit to the Department a request for a site-specific review.

(i) If the site-specific review determines that the proposed withdrawal is a zone A or a zone B withdrawal, the supervisor shall approve the withdrawal.

(ii) If the site-specific review determines that the proposed withdrawal is a zone C withdrawal, the supervisor shall not approve the withdrawal unless the permittee self certifies that he or she is implementing applicable environmentally sound and economically feasible water conservation measures under MCL 324.32708a, or the permittee has obtained a water withdrawal permit under MCL 324.32723.

(iii) If the site-specific review determines that the proposed withdrawal is a zone D withdrawal or likely to cause an adverse resource impact, the supervisor shall not approve the withdrawal unless the permittee has obtained a water withdrawal permit under MCL 324.32723.

R 324.1403 Water supply monitoring and storage.

Rule 1403. (1) If one or more freshwater wells are present within 1,320 feet of a proposed large volume water withdrawal, the permittee shall install a monitor well between the water withdrawal well(s) and the nearest freshwater well before beginning the water withdrawal. If more than one aquifer is delineated at the site, the monitor well shall be completed in the same aquifer as the water withdrawal well. The permittee shall measure and record the water level in the monitor well daily during water withdrawal and weekly thereafter until the water level stabilizes. The permittee shall report all water level data weekly to the supervisor or authorized representative of the supervisor.

(2) Freshwater storage pits and impoundments shall be constructed as approved by the supervisor and shall be in compliance with the following minimum requirements:

(a) Berms shall be designed and constructed to prevent washouts or failures.

(b) Pits shall be constructed with rounded corners and side slopes of not less than 20 degrees measured from the vertical.

(c) Pits shall adhere to applicable soil erosion and sedimentation control measures and may require fencing.

(3) Freshwater storage pits, impoundments, or tanks shall not remain on-site more than 6 months after final completion of the well or wells for which the storage was designed unless approved by the supervisor or authorized representative of the supervisor.

R 324.1404 Ground water baseline sampling for high volume hydraulic fracturing.

Rule 1404. (1) A permit applicant or permittee of an oil and gas well for which high volume hydraulic fracturing is proposed shall collect baseline samples from all available water sources, up to a maximum of 10, within a 1/4- mile radius of a the well location ~~for which high volume hydraulic fracturing is proposed.~~

(a) If more than 10 available water sources are present within a 1/4- mile radius of the proposed well location, the permit applicant or permittee shall select 10 sampling locations based on the following criteria:

(i) Available water sources closest to the proposed well location are preferred.

(ii) To extent groundwater flow direction is known or reasonably can be inferred, sample locations from both down gradient and up-gradient are preferred over cross-gradient locations. Where groundwater flow direction is uncertain, sample locations should be chosen in a radial pattern from a well.

(iii) Where multiple defined aquifers are present, sampling the deepest and shallowest identified aquifers is preferred.

(b) Initial sampling shall be conducted not more than six months prior to initiation of drilling operations for a new well or in the case of a re-completion of a well, high volume hydraulic fracturing using new or existing perforations. However, initial sampling shall satisfy sampling requirements for subsequent oil and gas wells on the same or contiguous drilling sites for a period of up to 3 years.

(c) Sampling and analysis shall conform to the following procedures:

(i) Water samples must be collected and analyzed utilizing proper sampling and laboratory protocol.

(ii) At a minimum, the analysis of baseline samples shall include the following:

(A) Benzene.

(B) Toluene.

(C) Ethylbenzene.

(D) Xylene.

(E) Total Dissolved Solids.

(F) Chloride.

(G) Methane.

(iii) The location of the sampled water sources shall be surveyed with a global positioning system device or equivalent with 3 meter or higher accuracy. The latitude and longitude coordinates shall be provided to the supervisor.

(iv) If free gas or a dissolved methane concentration greater than 1.0 milligram per liter is detected in a water sample, gas compositional analysis and stable isotope analysis of the methane (carbon and hydrogen – ^{12}C , ^{13}C , ^1H and ^2H) shall be performed to identify gas origin.

(v) The permit applicant or permittee shall notify the supervisor immediately if benzene, toluene, ethylbenzene, or xylenes are detected in a water sample.

(2) The permittee shall provide copies of all final laboratory analytical results to the supervisor and the water well owner or landowner within 45 days of collecting the samples.

R 324.1405 High volume hydraulic fracturing well completion operations; notification, monitoring, reporting, and fluid containment requirements.

Rule 1405. (1) A permittee shall notify the supervisor or authorized representative of the supervisor a minimum of 48 hours prior to the commencement of a high volume hydraulic fracturing completion. If the well is an H₂S well as defined in R 324.1101, a permittee shall also notify the local emergency preparedness coordinator a minimum of 48 hours prior to the commencement of a high volume hydraulic fracturing completion.

(2) During high volume hydraulic fracturing operations, the permittee shall monitor and record the injection pressure at the surface and the annulus pressure between the injection string and the next string of casing unless the annulus is cemented to surface. If intermediate casing has been set on the well to be stimulated, the pressure in the annulus between the intermediate casing and the production casing shall also be monitored and recorded.

(a) The permittee shall submit a continuous record of the annulus pressure during the well stimulation within 60 days of completing hydraulic fracturing operations.

(b) If during the hydraulic fracturing operation the injection pressures or annulus pressures, or both, indicate a lack of well integrity, the permittee shall immediately cease hydraulic fracturing operations and shall notify the supervisor or authorized representative of the supervisor. The permittee of the well shall submit to the supervisor or authorized representative of the supervisor the plan of action the permittee intends to take before continuing hydraulic fracturing operations on the well. The supervisor or authorized representative of the supervisor may require suitable mechanical integrity tests of the casing or the casing tubing annulus or cement bond logs, or both. The permittee shall submit a report containing all details pertaining to the incident, including corrective actions taken, within 60 days of completing hydraulic fracturing operations.

(3) Flowback fluid shall be contained in tanks or in receptacles approved by the supervisor or authorized representative of the supervisor. A permittee shall ensure that handling and disposal of flowback fluid does not cause waste as defined in section 61501(q) of the act.

(4) A permittee shall submit a complete copy of all service company hydraulic fracturing records for the high volume hydraulic fracturing of a well. The service company hydraulic fracturing records shall be submitted within 60 days after completing hydraulic fracturing operations. The service company hydraulic fracturing records shall include at a minimum the following data:

- (a) The actual total well stimulation treatment volume pumped.
- (b) Detail as to each fluid stage pumped, including actual volume by fluid stage, proppant rate or concentration, actual chemical additive name, type, concentration or rate, and amounts.
- (c) The actual breakdown pressure as measured at the surface or producing interval.
- (d) The actual surface pressure and rate at the end of each fluid stage and the actual flush volume, rate and final pump pressure.
- (e) The instantaneous shut-in pressure and the actual 15- minute and 30-minute shut-in pressures when these pressure measurements are available.

(5) A permittee shall report the total volume of water utilized for a high volume hydraulic fracturing operation and the source of the water withdrawn within 60 days of completing hydraulic fracturing operations.

R 324.1406 Disclosure of hydraulic fracturing fluid chemical additives.

Rule 1406. (1) A permittee shall submit information on chemical additives used in a high volume hydraulic fracturing operation using the internet-based FracFocus Chemical Disclosure Registry that is maintained by the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission and is accessed at <http://fracfocus.org>. In the event the FracFocus Chemical Disclosure Registry is no longer maintained or available, the permittee shall submit the information on a form prescribed by the supervisor or by any other means approved by the supervisor. A permittee shall submit the information within 30 days after completion of a high volume hydraulic fracturing operation. A contractor or supplier performing a high volume hydraulic fracturing operation for a permittee or providing supplies for a high volume hydraulic fracturing operation shall timely provide to the permittee the information required for the permittee to comply with this rule. The information shall include the following:

(a) A list of all chemical additives used during the treatment specified by general type, such as acids, biocides, breakers, corrosion inhibitors, cross-linkers, demulsifiers, friction reducers, gels, iron controls, oxygen scavengers, pH adjusting agents, scale inhibitors, and surfactants.

(b) The specific trade name and supplier of each chemical additive.

(c) A list showing the specific identity of each chemical constituent intentionally added to the primary carrier fluid and its associated CAS number, except that the specific identities and CAS numbers of trade secret chemicals may be withheld under the provisions of subrule (2).

(d) The maximum concentration of each chemical constituent within the chemical additive expressed as a percent by mass for each constituent.

(e) The maximum concentration of each chemical constituent listed expressed as a percent by mass of the total volume of hydraulic fracturing fluids utilized.

(2) If the specific identity of a chemical constituent and its associated CAS number are claimed to be a trade secret or have been finally determined to be entitled to protection as a trade secret under 29 CFR Section 1910.1200(i), the permittee may withhold the specific identity of the chemical constituent and its associated CAS number, but shall list the chemical family associated with the chemical constituent and provide a statement that a claim of trade secret protection has been made by the entity entitled to make such a claim. If an independent contractor or supplier providing a chemical constituent to a permittee withholds any information required under this rule under a claim of trade secret, the contractor or supplier shall provide the information required for the permittee to timely comply with this subrule.

(3) Nothing in this rule shall authorize any person to withhold information that is required by state or federal law to be provided to a health care professional for the purpose of diagnosis or treatment of a medical condition.